



Australian Rules Football

Characteristics of the Sport

Overview

Australian Rules Football is played predominantly by males with the major league, the Australian Football league, having developed into a national competition. It is played from primary school upwards, at a variety of levels both amateur and professional.

A game is made up of four 20-minute quarters, with time on (usually five to ten minutes) added for the time that the ball is out of play. The first and third quarters are separated by a short break (of ten minutes), with a longer break of fifteen minutes, off the ground, at half time. Each team consists of eighteen players on the ground, with another three 'interchange' players who may be swapped at any time for other players on the field. The traditional line up sees five lines of three players spread from one end of the ground (backs) to the other (forwards), with the other three players set to follow the play. However, as the game has evolved into a more mobile style of play, these traditional lines have lost much of their former meaning. In addition to running, players must leap to mark or punch the ball, deal with tackling, quick changes in direction and handballing.

Training

The football year can be divided into three sections: pre-season, season and off-season. The length of each section will vary with the level of competition. A typical outline would be:

- Off Season: 6-8 weeks of little or no scheduled training. Some clubs recognise that this is a time where body fat levels increase, and as a result require players to sign contracts regarding body fat levels that players are allowed to return at in the new season. Lean muscle tissue will also decrease over this period, as weight and skill sessions have stopped.
- Pre-Season: 2-4 months-training may start as early as November with 3-5 team practise sessions per week. In addition, there is usually a further 10 sessions which incorporate recovery, club education and weights. Individual players are often selected for specific programs according to the requirements of their position or their individual weaknesses. In general, training revolves around an aerobic program, of running drills, swimming and cycling, with additional weight training and skills sessions. Weight training is especially for players who need to build up bulk and strength.
- Competitive season: There is one game per week, which is usually on the weekend, but can be on a Monday or Friday night also. Most clubs schedule three or four training sessions in between games.

Competition

The AFL Season consists of 22 games preceding four weeks of finals, during March to August, with finals held in September. Most games are played on Saturday or Sunday afternoons with the under-age and reserved matches preceding the main game. The national competition involves interstate travel, with some games being played at night under lights. A supplementary night competition and pre-season match competitions start in January and may add another six matches to the year's tally.

An Australian Rules football match lasts about two hours, with the physiological demands varying considerably between field positions. On ball players (ruck rover, follower, wing player) can run between 12-20km in a game, which consists of low intensity jogging interspersed with high intensity sprints of less than 60m. Full backs and full forwards typically perform a higher number of short sprints.





Physical Characteristics

The physical demands of elite AFL football are increasing while the average age of the players is decreasing. The average age of elite AFL players is presently around 23.4 ± 4.3 , while the height is 185 ± 7.2 cm, however this varies between player positions. Typically, rucks can be over 200cm in height and weigh 99kg in comparison to running players such as the rovers with an average height of 174cm and weight of 75kg.

Body composition is usually assessed by skinfold thickness in most clubs, with some professional clubs having allowable upper limits above which players are not permitted to play. Most professional AFL players would be under a skinfold thickness of 55mm for seven sites, which roughly equates to a body fat percentage of 12%. Skinfold measurements are assessed on an individual basis and not all players are required to be at this level of body fat.

Players can encounter significant fluctuations in body fat throughout the season, usually returning from off season at the highest, and lowest at the end of pre season, with a small increase over the season itself.

Common Nutrition Issues

Dietary Habits

The average age of an AFL footballer is getting younger, and many professional clubs are recruiting players as young as 17 and a half years of age. Many of these players are required to move interstate at this time and may not have developed adequate nutritional practices. Sports Dietitians help provide life skills of cooking and shopping. Professional AFL football players are less and less likely to work full time employment with the increasing demands of training and recovery sessions. Training sessions are scheduled at all times of the day, making routine eating habits that bit harder.

According to two dietary surveys, one done in 1988 with 56 AFL players, and one done in 1999 on 40 AFL players, the dietary habits of these footballers over the past ten years has improved, with less dietary fat and alcohol consumed in 1999 compared with that in 1988. The intake of carbohydrate and protein has increased. The daily energy intake has not changed over this period. It is likely that the addition of sports Dietitians to most AFL clubs has improved the dietary habits of players.

	1988	1999
Energy	14.2	13.2
Carbohydrate (g)	373 ± 94	415 ± 18
Carbohydrate (g/kg)	4.5 ± 1.1	4.8 ± 0.2
Carbohydrate (% energy)	44	51.7
Protein (g)	126 ± 27	138.8 ± 4.5
Protein (g/kg)	1.5 ± 0.4	1.6 ± 0.05
Protein (% energy)	15	18.1
Fat (g)	141 ± 33	104 ± 5.6
Fat (% energy)	37.5	29.2
Alcohol (g)	20 ± 18	1.25 ± 0.6
Alcohol (% energy)	3.5	0.3

Table 1: Change in daily macronutrient intake of Australian Rules Footballers over time (mean \pm standard deviation).

Professional Australian rules football players are at risk of low iron stores, as they lose much iron through sweat from exercising and trauma from the impact of running. It is also possible that many players do not eat adequate quantities of iron containing foods.





Players consuming a wide variety of food rich in nutrients and quantity should meet all their requirements for iron and all other micronutrients. Some clubs will regularly test iron status of players to keep on top of this.

Pre-Game Nutrition

The pre-game meal has been a great point of tradition and superstition over the years, with steak and eggs a popular pre match meal for 'real men' many years ago. Now it is common practise to see high carbohydrate, low fat meals on the pre-game menu. Pasta meals are a popular choice amongst football players of all standards.

In professional football, the current AFL game schedule means that games can be late afternoon, night time matches or as traditionally held, in the early afternoon. In these situations many players will have a larger meal 3-4 hours before and then a small meal to top up carbohydrate and fluid stores in the one to two hours prior to the game.

Food choices such as breakfast cereals, sandwiches, white bread, pasta, muffins, fruit and liquid meal supplements are typical for pre-game. With interstate travel, teams are given special meals on aeroplanes or at the team hotel to accommodate these requirements.

Training and Game Fluid Intake

With the inclusion of more games in a season and pre-season competition, training sessions and matches are often conducted in warm conditions and now have a national competition. Fluid losses as high as 3.6 litres per game have been recorded in Australian Rules football matches and are not usually replaced during a game.

Water is usually provided during training and increasingly more clubs are providing sports drink as well. Carbohydrate containing fluids provide a supplementary fuel source when muscle glycogen stores are low, and may be more important in the latter stages of a game. In addition, sports drink may increase the amount of fluid consumed, when compared with water or cordial.

Recovery

Traditionally, football players have considered carbohydrate only on the eve of the match. Yet recovery from a match, and as importantly, between each training session, requires a high carbohydrate intake every day. It is likely that the game combined with long training nights will draw heavily on muscle glycogen stores particularly for running players. Muscle damage and injury, caused for example, by body contact and tackling, will increase both carbohydrate and protein requirements for glycogen restoration.

Active recovery should begin as soon as each exercise session finishes. A recovery snack followed with the resumption of the high carbohydrate diet will aid the recovery process. AFL clubs will usually provide players with muffins, flavoured milk, jube lollies and rolls (for example), to aid recovery.

Case Study

Jamie is a 24 year old male who plays Australian Rules football. He has played with the seniors for a few years now and whilst the training has always been tough, over the past year there has been more training sessions than ever before. In particular, the number of bike and weights sessions has increased. Jamie was finding it increasingly difficult to maintain weight and was losing muscle mass. He was aware of his weight loss and spoke to the dietitian about how he suffers from nerves on match day, leaving him unable to eat much before, during and after games.

Prior to the training sessions the dietitian measured Jamie's weight, body fat and took circumference measurements of his arms and legs.





Date	11/11/00	30/11/00	15/1/01	4/3/01	31/5/01	29/7/01
Height (cm)	178					
Weight (Kg)	79.0	79.0	79.2	79.0	77.5	76.8
Skinfold: 7 sites (mm)	51.9	45.1	47.7	48.9	42.7	42.2
Skinfold Goal: 7 sites (mm)	45					

Weekly Training

Monday:	11:30am-1:00pm 3:00pm-5:00pm	Advanced Skills session Training (Running, drills etc.)
Tuesday:	9:00am 4:00pm	Individual skills Sprints
Wednesday:	12:00-1:00pm	Training
Thursday:	2:30pm	Swimming
Friday:	Evening	Game
Saturday:	1:30pm	Recovery swim session
Sunday:		Rest or own training

Jamie's Food Record (Match Day)

Breakfast:	1 piece of toast with margarine and honey.
11:00am:	Sports drink, 300ml.
Game:	1 litre of sports drink during the game and 1 muffin following the game.
Dinner:	Large bowl pasta with vegetables and ice-cream.

Dietary Plan

Jamie usually felt too nervous to eat breakfast on the morning of the game. However, the dietitian reassured him that he did not have to eat a lot for breakfast but that it was important to eat some carbohydrates, to provide the muscles with enough fuel for the entire game.

The dietitian suggested trying liquid meals, which have the advantage of being high in energy and low in bulk. These included homemade milkshakes and Sustagen Sport. In addition, light snacks such as bananas, muffins, fruit juice, fruit jelly, sports bars, pikelets, honey/jam sandwiches and raisin bread were included in the pre and post game snack list.

Jamie refuelled after matches with easily digested carbohydrates such as rolls with low fat fillings (e.g. lean meat and cheese), muffins and jelly lollies.





Whilst not on match day, Jamie and the dietitian worked on having large regular meals and snacks and including nutritious milk drinks, as a convenient way to supply the carbohydrate and protein needed to maintain weight and put on muscle mass.

Sample Meal Plan

Breakfast:	Toast with margarine and honey. Cereal with yoghurt, banana and milk.
11:00am:	Liquid meal supplement and a cereal bar.
Game:	1 litre of sports drink.
Post game:	Ham and cheese roll, jelly beans. More sports drink.
Dinner:	Large bowl of pasta with vegetables. Ice-cream and tinned fruit.

Jamie's weight returned to 79kg, whilst maintaining his skinfold measurement around 45mm. He felt a lot stronger in his training sessions.

FACT SHEET

